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cc: Joe  
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DIV. OF OIL, GAS & MINING

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Daron,

Castle Valley Mining LLC located in Huntington, Utah would like to submit a Vegetation sampling report for the Tank Seam access road Reclamation. Enclosed you will find this report that was conducted by Environmental & Engineering Consulting (EIS).

The purpose of this report is to continue our effort for Bond release of this part of the Tank Seam Access road. This area is located in Bear Canyon, a branch of Huntington Canyon, located west of the town of Huntington, Utah. This area was reclaimed in 2005.

Any questions please feel free to contact me (435) 687 5454

Sincerely,

Jaren Jorgensen  
Engineer Tech

**Castle Valley Mine (Rhino Energy) Vegetation Sampling Report**  
**Tank Seam Access Road Reclamation**

**2012**

**Emery County, Utah**

CONDUCTED AUGUST 24<sup>TH</sup> & SEPTEMBER 5<sup>TH</sup> 2012

**EIS Environmental & Engineering Consulting**  
31 North Main Street \* Helper, Utah 84526  
Office – (435) 472-3814 \* Toll free – (800) 641-2927 \* Fax – (435) 472-8780  
eisec@preciscom.net

## **Introduction**

The Tank Seam Access Road Reclamation Area has been reclaimed since 2005. Rhino Energy contracted with EIS Environmental to survey the area for the condition, performance and overall statistical output of the area. This area is located in Bear Canyon, a branch of Huntington Canyon, located west of the town of Huntington, Utah. The reclaimed area is on an east facing slope surrounded by pinion-juniper plant communities. The reference area is located adjacent to the disturbance and was also surveyed.

## **Methods**

Random placement of 100 foot transects were placed in the reclamation and reference areas on August 24<sup>th</sup> and September 5<sup>th</sup> 2012. Points were read every five feet for a total of 20 points per transect. Vegetation (species), rock, litter (organic material), and soil was recorded at each point. A total of 48 transects were used on the reclamation area and 20 transects on the reference site.

## **Results**

A total of 48 transects were run over an estimated 4.96 acres. The results were gathered and tabulated in Table 1. The reference area of one acre was surveyed with 20 transects and the data gathered in Table 2. Standard deviations were calculated for both the reclamation and reference areas data in Table 3. Reference areas standard deviations are calculated in Table 4. Individual species occurrences for the reclamation area are referenced in Table 4. Reference area occurrences are shown in Table 5.

## **Conclusion**

Grasses dominated the vegetation in the reclamation area as well as the reference area. Grasses accounted for 64.4% of the total vegetation present. Forbs consisted of 31.5% and shrubs made up the difference at 4.1%. The total cover of vegetation in this area was at 15.8% with the rest made up from rock, soil and litter.

The reference areas vegetation was composed of 98% grasses (Salina Wildrye), 2% shrubs (Curl-leaf Mahogany), and no forbs were recorded by transects. The percent of coverage by vegetation was 12.8% with the remaining percentage made up of soil, rock, and litter.

**Table 1 Data From Reclamation Transects (Percent Cover)**

<b>Road Transects:</b>		
<b>Grasses:</b>	<b>%</b>	<b># of Occurances</b>
Bluebunch Wheatgrass	2.40%	23
Crested Wheatgrass	0.21%	2
Great Basin Wildrye	3.02%	29
Indian Ricegrass	0.52%	5
Intermediate Wheatgrass	0.10%	1
Salina Wildrye	2.19%	21
Saltgrass	1.35%	13
Western Wheatgrass	0.42%	4
Total Grasses:	<b>10.21%</b>	<b>98</b>
<b>Forbs:</b>		
Canadian Thistle	0.10%	1
Englemanns Aster	0.31%	3
Halogeton	0.21%	2
Palmers Penstemon	1.25%	12
Rubber Rabbitbrush	1.88%	18
Yarrow	0.94%	9
Yellow Rabbitbrush	0.31%	3
Total Forbs:	<b>5.00%</b>	<b>48</b>
<b>Shrubs:</b>		
Curl-leaf Mohagony	0.10%	1
Slender Buchwheat	0.21%	2
Wyoming Sagebrush	0.31%	3
Total Shrubs:	<b>0.63%</b>	<b>6</b>
<b>Soils:</b>	<b>37.08%</b>	<b>356</b>
<b>Rock:</b>	<b>30.42%</b>	<b>292</b>
<b>Litter:</b>	<b>16.67%</b>	<b>160</b>

**Table 2 Data from Reference Site (Percent Cover)**

<b>Reference Site:</b>		
<b>Grasses:</b>	Total %:	# of Occurances
Salina Wildrye	<b>12.50%</b>	<b>50</b>
<b>Shrubs:</b>		
Curl-leaf Mohagony	<b>0.25%</b>	<b>1</b>
<b>Soils:</b>	<b>41.50%</b>	<b>166</b>
<b>Rock:</b>	<b>21.25%</b>	<b>85</b>
<b>Litter:</b>	<b>24.50%</b>	<b>98</b>

**Table 3 Road Reclamation Site Standard Deviations**

**Total Cover**

<b>Reclamation Area</b>	<b>Mean % Cover</b>	<b>Standard Deviation</b>	<b>Sample Size</b>
Living Vegetation Sampled	15.83	17.52	48
Rock	30.42	22.08	48
Litter	16.67	17.89	48
Soil	37.08	23.18	48

<b>Composition</b>			
Shrubs/Trees	3.95	9.35	48
Forbes	31.58	22.31	48
Grasses	64.67	22.94	48

**Table 4 Reference Area Standard Deviations**

<b>Reference Area</b>	<b>Mean % Cover</b>	<b>Standard Deviation</b>	<b>Sample Size</b>
Living Vegetation Sampled	12.75	6.67	20
Rock	21.25	8.18	20
Litter	24.5	8.60	20
Soil	41.5	9.85	20

**Table 5 Road Reclamation Site Individual Species Occurrences**

Species	% Cover	Standard Deviation	Average/Transect
<b>Grasses</b>			
Bluebunch Wheatgrass	2.4	7.35	0.48
Crested Wheatgrass	0.21	2.20	0.10
Great Basin Wildrye	3.02	8.21	0.60
Indian Ricegrass	0.52	3.45	0.10
Intermediate Wheatgrass	0.10	1.52	0.02
Salina Wildrye	2.19	7.03	0.44
Saltgrass	1.35	5.54	0.27
Western Wheatgrass	0.42	3.10	0.08
<b>Forbs:</b>			
Canadian Thistle	0.10	1.52	0.02
Englemanns Aster	0.31	2.67	0.06
Halogeton	0.20	2.14	0.04
Palmers Penstemon	1.25	5.33	0.25
Rubber Rabbitbrush	1.88	6.52	0.38
Yarrow	0.94	4.63	0.19
Yellow Rabbitbrush	0.31	2.67	0.06
<b>Shrubs:</b>			
Curl-leaf Mohagony	0.10	1.52	0.02
Slender Buckwheat	0.21	2.20	0.04
Wyoming Sagebrush	0.31	2.67	0.06

**Table 6 Reference Area Site Individual Species Occurrences**

Species	% Cover	Standard Deviation	Average/Transect
<b>Grasses:</b>			
Salina Wildrye	12.5	6.61	2.5
<b>Shrubs:</b>			
Curl-leaf Mohagony	0.25	1.00	0.02